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Synopsis of the Parasites of Vertebrates of Canada

Edited by Murray J. Kennedy

Parasites of Marine Mammals

Leo Margolis

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Alberta
AGRICULTURE
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Edited by Murray J. Kennedy[1]

Parasites of Marine Mammals

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Abstract

This synopsis contains Parasite-Host and Host-Parasite lists for 74 species of parasites from 26 species (1 with 2 subspecies) of marine mammals from Canadian waters. The 74 species are distributed among higher taxa as follows: Protozoa - 2; Trematoda - 9; Cestoidea - 9; Nematoda - 24; Acanthocephala - 10; Copepoda - 1; Amphipoda - 13; Anoplura - 3; and Acarina - 3. Eighteen previously unpublished host-parasite-locality records are added to the faunal records, including five species (one unnamed) previously unreported from Canadian waters: *Hadwenius nipponicus* (Trematoda), *Placentonema gigantissima* (Nematoda), *Corynosoma ?similis* (Acanthocephala), and *Orthohalarachne attenuata* (Acarina). *Cyamus boopis* (Amphipoda) from *Balaenoptera physalus* in Atlantic waters appears to be a new host-parasite record.

Forward

Records of parasites found in Canadian animals go back almost 200 years, when de La Martinière (1787) described a monogenean from a fish taken off the west coast of Vancouver Island during the La Perouse Expedition, while more comprehensive faunal lists date back to the 1850s e.g. Stimpson (1854). Margolis and Arthur (1979) in their introduction to the *Synopsis of the Parasites of Fishes of Canada* outlined the steady increase in volume in investigations into fish parasites and a similar escalation is apparent when one considers other vertebrate host taxa: Amphibians, Reptiles, Birds and Mammals.

The possibility of producing a synoptic coverage of parasites of animals of Canada was first raised at a meeting of the Executive Committee of the Parasitology Section of the Canadian Society of Zoologists in 1978 by Leo Margolis. A committee was established to examine the feasibility of the proposal. In 1982, Smith and Addison published a *Bibliography of Parasites and Diseases of Ontario Wildlife*, which provided an extensive coverage of known pathogens (including bacteria, fungi, rickettsiae, helminths, insects, arachnids, "anatomical disorders", "environmental contaminants", genetic, nutritional and reproductive disorders, protists and viruses). With the publication of the above synopsis and bibliographies (Margolis and Arthur, 1979 and Smith and Addison, 1982) the worth of providing synopses/bibliographies of the parasites of all vertebrate groups in Canada became increasingly obvious. Thus, in 1983 the question of the synopsis was resuscitated and the Executive Committee of the Parasitology Section under the Chairmanship of Charles Tanner approved coverage of the vertebrate hosts.

The Executive Committee had hoped to publish the synopsis in 1986 to commemorate the 25th anniversary of the Canadian Society of Zoologists. Unfortunately lack of funding became a major barrier to progress and the series, which was almost 50 per cent completed, remained in manuscript form. With the appearance of Dr. Kennedy's two synopses in 1986 the possibility of publishing the synopsis under the aegis of Alberta Agriculture became a possibility. In conversation with Dr. Kennedy he assured me of his enthusiastic support for this approach, and his willingness to act as editor for the series. In 1988 Mr. Ben McEwan, Deputy Minister of Alberta Agriculture approved the initiative, and the editorship transferred from me to Murray Kennedy. The publication of the series will continue with the present volume being the first in the series. Each part will be published as it is completed, rather than adhering to a systematic ordering, and each will have an introduction to include pertinent background of the taxa under consideration.

The authority for the taxonomic arrangement of the major hosts and parasite groups will be declared for each volume. Although we recommend a uniform classificatory scheme be used for the parasites throughout the series, the difficulties of adhering to any one classification are well known and need not be enumerated here. Therefore, some flexibility has been allowed.

It is my hope that updated synopses and bibliographies will be produced at appropriate intervals in the future and that the present series represents a foundation.

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Kennedy, M.J. 1986. Synopsis of the Parasites of Vertebrates of Canada-Helminths and Protozoa of Terrestrial Mammals. Alberta Agriculture Publication. 90 p.

Kennedy, M.J., and R.A. Newman. 1986. Synopsis of the Parasites of Vertebrates of Canada-Ectoparasites of Terrestrial Mammals. Alberta Agriculture Publication. 109 p.

de La Martinière. 1787. Mémoire sur quelques insectes. Obs. Sur. Phys. (etc)., Vol. 31, Pt2, Sept., p. 207-209, pl. 2. fig. 1-7; Oct., p. 264-266, pl. 2. fig. 8-12; Nov., p 365-366, pl. 2, fig. 13-15.

Margolis, L., and J.R. Arthur. 1979. Synopsis of the Parasites of Fishes of Canada. Bulletin of the Fisheries Research Board of Canada 199: 269 p.

Smith, L.M., and E.M. Addison. 1982. A Bibliography of Parasites and Diseases of Ontario Wildlife. Ontario Ministry of Natural Resources. Wildlife Research Report No. 99: 267 p.

Stimpson, W. 1854. Synopsis of the Marine Invertebrates of Grand Manan: or the region about the mouth of the Bay of Funday, New Brunswick. Smithsonian Contribution to Knowledge 6: 1-66.

Introduction

Although the earliest record of a parasite from marine mammals taken in Canadian waters may date back to 1853, the parasite fauna of these mammals in Canadian waters is far from adequately known. Undoubtedly, more intensive studies than have been conducted to date would bring to light the existence in this fauna of additional species of parasites and would provide further host and distributional records. Indeed, many parasite species not known from Canadian waters have been reported from other geographic areas in marine mammals that are found also in Canadian waters; some of these sea mammals are highly migratory and occur only seasonally in Canadian waters. The present compilation must, therefore, be regarded as indicative only of the present state of knowledge and not as a definitive synopsis of the fauna. Users of the synopsis are cautioned to bear this in mind, particularly when comparisons with other geographic areas are being attempted.

Only species considered to be obligatory and permanent parasites are included herein. Organisms that are more properly classified as commensals (e.g., the nematode *Odontobius ceti* Roussel de Vauzème, 1834 and the copepod *Balaenophilus unisetus* Aurivillius, 1879, which live on the baleen plates of whales) or that have a phoretic relationship with marine mammals (e.g., various barnacles), and the lampreys, which are regarded either as temporary parasites or predators, are excluded.

Two known fish parasites that have been reported from marine mammals are not included in the present synopsis. They are the cestode *Abothrium gadi* van Beneden, 1871, reported by Margolis (1956) from *Eumetopias jubatus* from the Pacific coast and the nematode *Hysterothylacium aduncum* (Rudolphi, 1802) [recorded as *Contracaecum gadi* (O. F Müller, 1777)], reported by Ronald et al. (1970) from *Pagophilus (= Phoca) groenlandicus* from the Atlantic coast. The occurrence of these helminths in marine mammals likely resulted from recent ingestion of infected fish and they should not be considered as true parasites of these mammals.

The synopsis indicates that up to October 1988, at least 69 species of parasites have been reported from 26 species (1 with 2 subspecies) of marine Carnivora and Cetacea. Five additional species (one unnamed) from previously unpublished data in the files of one of us (L.M.) are also listed in the synopsis. Parasites not identified to the species level are not included in the total number, except in cases where named species have not been recorded in Canadian waters for the genus in question or clearly a separate species is involved. The 74 species are divided among major taxa as follows: Protozoa -2; Trematoda -9; Cestoidea -9; Nematoda -24; Acanthocephala -10; Copepoda -1; Amphipoda -13; Anoplura -3; and Acarina -3.

Eighteen previously unpublished host-parasite-locality records from the files of L.M. are included in the present synopsis and are designated in the Parasite-Host list as "previously unpublished." They are:

1. *Campula oblonga* Cobbold, 1858 (Trematoda) from *Phocoena phocoena* and *Phocoenoides dalli;* Pacific coast.
2. *Hadwenius nipponicus* Yamaguti, 1951 (Trematoda) from *Phocoena phocoena*; Pacific coast.
3. *Plicobothrium globicephalae* Rausch and Margolis, 1969 (Cestoidea) from *Lagenorhynchus albirostris;* Atlantic coast.
4. *Phyllobothrium delphini* (Bosc, 1802) (Cestoidea) from *Balaenoptera physalus;* Atlantic coast.
5. *Anisakis physeteris* Baylis, 1923 (Nematoda) from *Physeter catodon;* Atlantic coast.
6. *Anisakis simplex* (Rudolphi, 1809) from *Balaenoptera acutorostrata, Balaenoptera physalus, Phocoena phocaena,* and *Physeter catodon;* Atlantic coast.
7. *Anisakis simplex* (Rudolphi, 1809) from *Phocoena phocoena*; Pacific coast.
8. *Crassicauda* sp. (Nematoda) from *Phocoena phocoena;* Pacific coast.
9. *Placentonema gigantissima* Gubanov, 1951 (Nematoda) from *Physeter catodon;* Pacific coast.
10. *Bolbosoma* sp. (Acanthocephala) from *Balaenoptera physalus;* Pacific coast.
11. *Corynosoma* sp. (? *similis* Neiland, 1962) (Acanthocephala) from *Phocoena phocoena*; Pacific coast.
12. *Cyamus boopis* Lütken, 1870 (Amphipoda) from *Balaenoptera physalus*; Atlantic coast. This also appears to be a new host-parasite record.
13. *Orthohalarachne attenuata* (Banks, 1910) (Acarina) from *Callorhinus ursinus;* Pacific coast.
14. *Orthohalarachne diminuata* (Doetschman, 1944) from *Callorhinus ursinus;* Pacific coast.

Of the above 14 parasite species, five are reported from Canada for the first time: *Hadwenius nipponicus, Crassicauda* sp. (unnamed), *Placentonema gigantissima, Corynosoma ? similis,* and *Orthohalarachne attenuata.*

The classification and nomenclature of parasite taxa used herein generally follows currently accepted taxonomic systems. However, as has been emphasized by Gibson (1987), there has been no single system of trematode classification that has met with wide acceptance. We have chosen to use the classification and nomenclature recently proposed by Brooks et al. (1985), with addition of the superfamily Notocotyloidea. For Protozoa we used the system proposed by Levine et al. (1980); for Cestoidea, Nematoda, and Acanthocephala, we adopted the systems of Schmidt (1986), Anderson et al. (1974-1983), and Amin (1985), respectively. The

arthropod parasites covered in this synopsis have been grouped in the classical way under the classes Crustacea (Copepoda and Amphipoda), Insecta (Anoplura), and Arachnoidea (Acarina).

Host nomenclature and classification conform to the usage of Banks et al. (1987). In addition, two subspecies of the harbor seal are recognized. In accordance with the arguments presented by Shaughnessy and Fay (1977), the subspecific name of the Pacific coast harbor seal is spelled *richardsi*. All Atlantic and eastern Arctic records from the harbor seal are assigned to the subspecies *concolor*, although most authors did not include a subspecific name for this seal.

The format of the entries in the synopsis follows that used by Margolis and Arthur (1979) in their *Synopsis of the Parasites of Fishes of Canada*.

The PARASITE-HOST list is organized by higher taxa of parasites in the following order: Protozoa (Apicomplexa), Platyhelminthes (Trematoda, Cestoidea), Nemathelminthes (Nematoda), Acanthocephala, and Arthropoda (Crustacea: Copepoda, Amphipoda; Insecta: Anoplura; Arachnoidea: Acarina). Species, genera, and families are listed in alphabetical order within their respective next higher taxon, which in the case of a family is a superfamily, a suborder, or an order, depending on the group in question and the usefulness of including the superfamily or suborder category.

For each parasite species listed, the following information is provided:

1) The current **scientific name,** including author(s) and date(s), followed by any recognized synonyms that have been used in establishing the Canadian record(s). No attempt has been made to evaluate systematically the validity of published records, but attention is drawn to obvious errors.

2) The **site** of occurrence of the parasite in its host(s) (aberrant sites usually are not included). When the site was not given, the likely site as determined from other records, is enclosed in square brackets.

3) The **hosts.** Only currently accepted scientific names as recommended by Banks et al. (1987) are given in the Parasite-Host List. Numbers in parentheses after each host name correspond with the numbers assigned to the references establishing the particular parasite-host records.

4) **Distribution (Dist.)** within Canadian waters. The species are grouped into four geographic regions or localities: Atlantic (Atl), Pacific (Pac), Eastern Arctic (E Arc), and Western Arctic (W Arc). Eastern and Western Arctic are divided by 100° W longitude. The Eastern Arctic is generally defined as north of 60° N latitude, except that it includes Hudson Bay and Ungava Bay.

5) Authors responsible for the **records** are listed in chronological order of the published records. To enable the reader to grasp at a glance the author(s) responsible for particular parasite-host-locality records, we numbered the references listed under "Records" and placed the corresponding number(s) after the host name, and each reference is followed by the locality or localities from which the parasite was (were) reported. When only one host is listed for a particular parasite the references are not numbered, and when all records are from the same locality the latter is not listed after the authors' names.

6) Under **Remarks,** explanatory comments, as required, are offered on systematics, nomenclature, misidentifications, and synonymies of parasites; and on the hosts, sites within hosts, and validity of previous records.

In the HOST-PARASITE LIST, within each order or suborder, the families, genera, species, and subspecies are listed alphabetically. Host synonyms included are only those that were used in establishing the Canadian parasite records. After the name of each parasite species, its geographic distribution in the host in question is given in parentheses.

PARASITE-HOST LIST

SUBKINGDOM PROTOZOA
PHYLUM APICOMPLEXA

CLASS SPOROZOEA
SUBCLASS COCCIDIA

ORDER EUCOCCIDIIDA
SUBORDER EIMERIINA

FAMILY EIMERIIDAE

Eimeria phocae Hsu, Melby and Altman, 1974
Site: unspecified
Host: *Phoca vitulina concolor*
Dist.: Atl
Record: McClelland 1980c

FAMILY SARCOCYSTIDAE

Sarcocystis sp.
Sites: skeletal muscles, myocardium
Host: *Globicephala melaena*
Dist.: Atl
Record: Cowan 1966

SUBKINGDOM EUMETAZOA
PHYLUM PLATYHELMINTHES

CLASS TREMATODA
SUBCLASS DIGENEA

ORDER PARAMPHISTOMIFORMES

SUPERFAMILY NOTOCOTYLOIDEA
FAMILY NOTOCOTYLIDAE

Ogmogaster antarcticus Johnston, 1931
Syn.: *Ogmogaster plicatus* of Margolis and Pike (1955), in part
Site: large intestine
Host: *Balaenoptera borealis*
Dist.: Pac
Record: Rausch and Fay 1966

Ogmogaster plicatus (Creplin, 1829) Jägerskiöld, 1891
Site: small intestine
Hosts: *Balaenoptera borealis* (1, 2)
Balaenoptera physalus (1, 2)
Balaenoptera sp. (3)
Dist.: Pac
Records: 1. Margolis and Pike 1955; 2. Rausch and Fay 1966; 3. Gibson and Harris 1979

ORDER ECHINOSTOMATIFORMES

SUPERFAMILY FASCIOLOIDEA
FAMILY CAMPULIDAE

Campula oblonga Cobbold, 1858
Site: bile ducts
Hosts: *Phocoena phocoena* (1, 2)
Phocoenoides dalli (2)
Dist.: Atl, Pac
Records: 1. Smith and Threlfall 1973 (Atl); 2. Previously unpublished (Pac)
Remarks: Smith and Threlfall (1973) did not specify the site in which their specimens from *P. phocoena* were found, but presumably it was the bile ducts.

Hadwenius nipponicus Yamaguti, 1951
Site: stomach
Host: *Phocoena phocoena*
Dist.: Pac
Record: Previously unpublished

Hadwenius seymouri Price, 1932
Site: intestine
Host: *Delphinapterus leucas*
Dist.: W Arc
Record: Wazura et al. 1986

Lecithodesmus goliath (van Beneden, 1858) Odhner, 1905
Site: bile ducts
Host: *Balaenoptera physalus*
Dist.: Pac
Record: Margolis and Pike 1955

Lecithodesmus spinosus Margolis and Pike, 1955
Site: bile ducts
Host: *Balaenoptera borealis*
Dist.: Pac
Record: Margolis and Pike 1955

Leucasiella arctica Delyamure and Kleinenberg, 1958
Site: rectum
Host: *Delphinapterus leucas*
Dist.: W Arc
Record: Wazura et al. 1986

Orthosplanchnus arcticus Odhner, 1905
Site: liver, bile ducts
Hosts: *Globicephala melaena* (2, 3)
Phoca hispida (1)
Dist.: Atl, W Arc
Records: 1. Cooper 1921 (W Arc); 2. Cowan 1966 (Atl); 3. 1967 (Atl)
Remarks: Cowan (1966) initially reported this species simply as "trematode worms."

CLASS CESTOIDEA
SUBCLASS EUCESTODA
ORDER PSEUDOPHYLLIDEA
FAMILY DIPHYLLOBOTHRIIDAE

Diphyllobothrium cordatum (Leuckart, 1863) Gedoelst, 1911
Site: intestine
Host: *Erignathus barbatus*
Dist.: E Arc, W Arc
Records: Cooper 1921 (W Arc); Markowski 1952 (E Arc)

Diphyllobothrium lanceolatum (Krabbe, 1865) Cooper, 1921
Syn.: *Cordicephalus phocarus* Wardle, McLeod and Stewart, 1947, in part ("type 2" of Wardle et al. 1947)
Site: intestine
Hosts: *Erignathus barbatus* (1, 2, 3)
Phoca groenlandica (2, 3)
Dist.: Atl, E Arc, W Arc
Records: 1. Cooper 1921 (W Arc); 2. Wardle, McLeod and Stewart 1947 (Atl); 3. Markowski 1952 (E Arc)

Diphyllobothrium pacificum (Nybelin, 1931) Margolis, 1956
Site: intestine
Host: *Eumetopias jubatus*
Dist.: Pac
Record: Margolis 1956

Diphyllobothrium spp.
Site: intestine
Hosts: *Erignathus barbatus* (1, 2)
Globicephala melaena (4)
Phoca groenlandica (2, 3)
Dist.: Atl, E Arc, W Arc
Records: 1. Cooper 1921 (W Arc); 2. Lyster 1940 (E Arc); 3. Markowski 1952 (E Arc); 4. Cowan 1967 (Atl)
Remarks: Lyster (1940) suggested that his specimens might belong to *Diphyllobothrium lanceolatum.*

Diplogonoporus tetrapterus (von Siebold, 1848) Ariola, 1896
Site: intestine
Host: *Eumetopias jubatus*
Dist.: Pac
Record: Margolis 1956

Diplogonoporus sp.
Site: intestine
Hosts: *Erignathus barbatus*
Phoca groenlandica
Dist.: Atl
Record: Wardle et al. 1947
Remarks: Wardle et al. (1947) described a diplogonadic cestode (their "type 1"), which they considered reminiscent of *Diplogonoporus fasciatus* (Krabbe, 1865). They included it in their new genus *Cordicephalus,* as *C. phocarus* (Fabricius, 1780). However, *Cordicephalus* has not been accepted as a valid genus, nor is *fasciatus* a synonym of *phocarus* (see Stunkard 1948; Markowski 1952). We here assign Wardle et al.'s (1947) "type 1" diphyllobothriid to *Diplogonoporus.*

Plicobothrium globicephalae Rausch and Margolis, 1969
Site: small intestine
Hosts: *Globicephala melaena* (1)
Lagenorhynchus albirostris (2)
Dist.: Atl
Records: 1. Rausch and Margolis 1969; 2. Previously unpublished

Pyramicocephalus phocarum (Fabricius, 1780) Monticelli, 1890
Syn.: *Bothriocephalus anthocephalus* of Baird (1853)
Site: intestine
Host: *Erignathus barbatus*
Dist.: Atl, E Arc, W Arc
Records: Baird 1853 (E Arc); Cooper 1921 (W Arc); Markowski 1952 (E Arc)
Remarks: Baird (1853) reported *B. anthocephalus,* which Markowski (1952) considered as a synonym of *P. phocarum,* from Baffin Bay. Although the precise locality was not indicated, we are including this record here because of the possibility that it pertains to Canadian waters.

ORDER TETRAPHYLLIDEA
FAMILY PHYLLOBOTHRIIDAE

Phyllobothrium delphini (Bosc, 1802) van Beneden, 1870
Site: blubber
Hosts: *Balaenoptera physalus* (1, 3)
Globicephala melaena (2)
Physeter catodon (1)
Dist.: Atl, Pac
Records: 1. Margolis and Pike 1955 (Pac); 2. Sergeant 1962 (Atl); 3. Previously unpublished (Atl)

Phyllobothrium sp.
Sites: abdominal subserosa, blubber
Host: *Globicephala melaena*
Dist.: Atl
Records: Cowan 1966, 1967
Remarks: The cestode plerocercoids reported by Cowan (1966) were subsequently assigned by him (Cowan 1967) to *Phyllobothrium* sp.

ORDER CYCLOPHYLLIDEA

FAMILY TETRABOTHRIIDAE

Anophryocephalus anophrys Baylis, 1922
Site: [intestine]
Host: *Phoca groenlandica*
Dist.: Atl
Record: Smith and Threlfall 1973

Anophryocephalus sp.
Syn.: *Anophryocephala* sp. of McClelland (1980c)
Site: intestine
Host: *Phoca vitulina concolor*
Dist.: Atl
Record: McClelland 1980c

Trigonocotyle lintoni Guiart, 1935
Site: intestine
Host: *Globicephala melaena*
Dist.: Atl
Record: Cowan 1967
Remarks: In his Handbook of Tapeworm Identification, Schmidt (1986) listed this species as *Trigonocotyle monticellii* (Linton, 1923) Baer, 1932, with *T. lintoni* Guiart, 1935 as one of its synonyms. However, in accordance with Article 52(b) of the International Code of Zoological Nomenclature (3rd edition, 1985), *"monticellii,"* as a junior primary homonym, is a permanently invalid name for this tapeworm. Contrary to the views expressed by Baer (1954), who reviewed the nomenclatural history of this species and proposed for it yet another new specific name *(globicephalae),* the next available name for the cestode in question is *"lintoni."* Guiart (1935) explicitly applied this name as a replacement for the homonym *"monticellii,"* although unfortunately he proceeded to describe under the name *Trigonocotyle lintoni* a different species, which Baer (1954), upon re-examination, considered to be *Tetrabothrius forsteri* (Krefft, 1871).

UNIDENTIFIED CESTOIDEA

Cestoidea gen. spp.
Sites: intestine, stomach
Hosts: *Balaenoptera borealis* and/or *Megaptera novaeangliae* (1)
Erignathus barbatus (2)
Dist: E Arc, Pac
Records: 1. Cornwall 1928 (Pac); 2. Dunbar 1949 (E Arc)

PHYLUM NEMATHELMINTHES

CLASS NEMATODA
SUBCLASS ADENOPHOREA

ORDER ENOPLIDA

SUPERFAMILY TRICHINELLOIDEA
FAMILY TRICHINELLIDAE

Trichinella spiralis (Owen, 1835) Raillient, 1895
Site: musculature
Hosts: *Erignathus barbatus* (2)
Odobenus rosmarus (1,2)
Dist: E Arc
Records: 1. Kuitunen-Ekbaum 1954; 2. Mansfield (1963)

SUBCLASS SECERNENTEA

ORDER ASCARIDIDA

SUPERFAMILY ASCARIDOIDEA
FAMILY ANISAKIDAE

Anisakis physeteris Baylis, 1923
Site: stomach
Host: *Physeter catodon*
Dist.: Atl, Pac
Records: Margolis and Pike 1955 (Pac); Previously unpublished (Atl)

Anisakis simplex (Rudolphi, 1809) Baylis, 1920
Site: stomach
Hosts: *Balaenoptera acutorostrata* (12)
Balaenoptera borealis (1,2,3,10)
Balaenoptera physalus (12)
Berardius Bairdii (7)
Delphinapterus leucas (4,5,6,13)
Globicephala melaena (8)
Orcinus orca (9,10)
Phocoena phocoena (11)
Phocoenoides dalli (10)
Physeter catodon (7,12)
Dist.: Atl, E Arc, Pac, W Arc
Records: 1. Mueller 1927a (Pac); 2. 1927b (Pac); 3. Cornwall 1928 (Pac); 4. Lyster 1940 (Atl); 5. Vladykov 1944 (Atl); 5. Doan and Douglas 1953 (E Arc); 7. Margolis and Pike 1955 (Pac); 8. Sergeant 1962 (Atl); 9. Newman and McGeer 1966 (Pac); 10. Margolis and Dailey 1972 (Pac); 11. Previously unpublished (Pac); 12. Previously unpublished (Atl); 13. Wazura et al. 1986 (W Arc)

Remarks: Davey (1971) attributed records of *A. simplex* from *O. orca, P. dalli,* and *Megaptera novaeangliae* to Margolis and Pike (1955). However, the first records of *A. simplex* from *O. orca* and *P. dalli* from Canadian waters were reported by Margolis and Dailey (1972). A confirmed record of *A. simplex* from *Megaptera novaeangliae* in Canadian waters is still not documented, although Margolis and Pike (1955) reported *Anisakis* sp. from this host.

Anisakis sp.

Site: gastrointestinal tract

Hosts: *Balaenoptera physalus* (2)
Delphinapterus leucas (1)
Globicephala melaena (5, 6)
Halichoerus grypus (4, 7)
Lagenorhynchus albirostris (3)
Megaptera novaeangliae (2)
Phoca groenlandica (8)
Phoca vitulina concolor (4,8)
Pseudorca crassidens (9)

Dist.: Atl, E Arc, Pac

Records: 1. Lyster 1940 (E Arc); 2. Margolis and Pike 1955 (Pac); 3. Sergeant and Fisher 1957 (Atl); 4. Scott and Fisher 1958b (Atl); 5. Cowan 1966 (Atl); 6. Cowan 1967 (Atl); 7. Mansfield and Beck 1977 (Atl); 8. McClelland 1980c, experimental and natural (Atl); 9. Previously unpublished (Pac)

Remarks: The nematodes reported by Cowan (1966) from the "true (peptic) stomach" of *G. melaena* are included here because it appears that he subsequently identified them as *Anisakis* sp. (Cowan 1967). The unpublished record from *P. crassidens* pertains to larval worms.

Contracaecum osculatum (Rudolphi, 1802) Baylis, 1920

Syn.: *Ascaris osculata* Rudolphi, 1802 of Baird (1853)

Site: stomach

Hosts: *Erignathus barbatus* (1, 5)
Eumetopias jubatus (4)
Halichoerus grypus (9)
Phoca groenlandica (5, 6, 7)
Phoca hispida (2, 5)
Phoca vitulina concolor (2, 5)
Phoca vitulina richardsi (3, 4)

Dist.: Atl, E Arc, Pac, W Arc

Records: 1. Baird 1853 (E Arc); 2. Lyster 1940 (Atl, E Arc); 3. Fisher 1952 (Pac); 4. Margolis 1956 (Pac); 5. Myers 1957a (E Arc, W Arc); 6. 1957b (Atl); 7. Smith and Threlfall 1973 (Atl); 8. McClelland 1980c (Atl); 9. McClelland et al. 1987 (Atl)

Remarks: Lyster (1940) reported *C. osculatum* from *P. hispida* and *P. vitulina* from several localities in the eastern Arctic and the Atlantic regions, but the localities were not segregated by host. We arbitrarily assigned all records from *P. hispida* to the eastern Arctic and the records from *P. vitulina* to both the eastern Arctic and Atlantic regions. *Ascaris osculata* of Baird (1853) was reported from an unspecified locality in Baffin Bay. We are including the record here because of the possibility that it pertains to Canadian waters.

Contracaecum spp.

Syn.: *Phocascaris* sp. of Myers (1957a, b) and of McClelland (1980c)

Sites: stomach, less commonly intestine

Hosts: *Delphinapterus leucas* (8)
Halichoerus grypus (3, 6)
Phoca groenlandica (2, 3, 4, 7)
Phoca hispida (1)
Phoca vitulina concolor (3)
Phocoena phocoena (5)

Dist.: Atl, E Arc, W Arc

Records: 1. Myers 1957a (E Arc); 2. 1957b (Atl); 3. Scott and Fisher 1958b (Atl); 4. Wilson and Stockdale 1970 (locality not specified); 5. Smith and Threlfall 1973 (Atl); 6. Mansfield and Beck 1977 (Atl); 7. McClelland 1980c (Atl); 8. Wazura et al. 1986 (W Arc)

Remarks: *Phocascaris* was declared a synonym of *Contracaecum* by Soleim (1984). The records of Myers (1957a, b) and McClelland (1980c) were reported as *Phocascaris* sp. Wilson and Stockdale (1970) did not specify the locality of capture or captivity of the harp seal they examined. Stockdale (pers. comm. 1985) advised that the seal was one of a group obtained from eastern Canada and maintained at the University of Guelph.

Phocascaris netsiki Lyster, 1940

Site: stomach

Hosts: *Phoca hispida*
Phoca vitulina concolor
"seal"

Dist.: E Arc

Record: Lyster 1940

Remarks: Soleim (1984) placed the genus *Phocascaris* in synonymy with *Contracaecum.* Although he mentioned *P. cystophorae* and *P. phocae* (but not *P. netsiki*) as species in *Phocascaris,* he did not formally establish new combinations for these species in the genus *Contracaecum.* Pending clarification of the status of *P. netsiki,* we are retaining it in *Phocascaris.* In the summary host-parasite list

in Lyster's (1940) paper, *P. vitulina* is included as a host of *P. netsiki*, although this species of seal is not mentioned as a host in the text.

Pseudoterranova decipiens (Krabbe, 1878) Gibson and Colin, 1982
Syn.: *Porrocaecum decipiens* (Krabbe, 1878) Baylis, 1920
Terranova decipiens (Krabbe, 1878) Mozgovoy, 1951
Phocanema decipiens (Krabbe, 1878) Myers, 1959
Site: gastrointestinal tract
Hosts: *Delphinapterus leucas* (9)
Erignathus barbatus (1, 7)
Eumetopias jubatus (6)
Halichoerus grypus (2, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 22, 23)
Phoca groenlandica (1, 8, 10, 11, 15, 18, 21)
Phoca hispida (7)
Phoca vitulina concolor (1, 2, 4, 5, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22)
Phoca vitulina richardsi (3,6)
Phocoena phocoena (9)
"seals" (1)
Dist.: Atl, E Arc, Pac
Records: 1. Lyster 1940 (Atl, E Arc); 2. Scott 1950 (Atl); 3. Fisher 1952 (Pac); 4. Scott 1953, experimental and natural (Atl); 5. 1955, experimental (Atl); 6. Margolis 1956 (Pac); 7. Myers 1957a (E Arc); 8. 1957b (Atl); 9. Scott and Fisher 1958a (Atl); 10. 1958b (Atl); 11. Myers 1960 (Atl); 12. Scott and Black 1960 (Atl); 13. Mansfield 1963 (Atl); 14. McClelland and Ronald 1970 (Atl); 15. Ronald et al. 1970 (Atl); 16. McClelland and Ronald 1974 (Atl); 17. McClelland 1976, experimental (Atl); 18. Mansfield and Beck 1977 (Atl); 19. McClelland 1980a, experimental (Atl); 20. 1980b, experimental (Atl); 21. 1980c, experimental and natural (Atl); 22. 1982 (Atl); 23. McClelland et al. 1987 (Atl)
Remarks: All records cited above were reported under one or other of the synonyms listed above. We accept Gibson and Colin's (1982) and Gibson's (1983) arguments that the valid generic name for this nematode is *Pseudoterranova*.

Anisakinae gen. sp.
Site: gastrointestinal tract
Hosts: *Halichoerus grypus*
Phoca groenlandica
Phoca vitulina concolor
Dist.: Atl
Record: Montreuil and Ronald 1957

ORDER SPIRURIDA

SUPERFAMILY HABRONEMATOIDEA
FAMILY TETRAMERIDAE

Crassicauda boopis Baylis, 1920
Syn.: *Crassicauda pacifica* Margolis and Pike, 1955
Site: kidneys
Host: *Balaenoptera physalus*
Dist.: Pac
Record: Margolis and Pike 1955
Remarks: *Crassicauda boopis* and *C. pacifica* were originally described from posterior and anterior regions, respectively, of these worms, which are difficult to dissect from host tissues in their entirety. Lambertsen (1985) obtained a single whole specimen, which enabled him to demonstrate that *C. pacifica* is a synonym of *C. boopis*.

Crassicauda sp.
Site: cavities within the blubber
Host: *Phocoena phocoena*
Dist.: Pac
Record: Previously unpublished
Remarks: This species is distinct from *C. boopis*, found in certain larger baleen whales. It is unquestionably identical with the unnamed *Crassicauda* sp. reported by Dailey and Stroud (1978) from the blubber, mammary glands, and urogenital system of *P. phocoena* stranded on the shores of Oregon, U.S.A.

Placentonema gigantissima Gubanov, 1951
Site: placenta
Host: *Physeter catodon*
Dist.: Pac
Record: Previously unpublished

SUPERFAMILY FILARIOIDEA
FAMILY ONCHOCERCIDAE

Dipetalonema spirocauda (Leidy, 1858) Anderson, 1959
Site: aorta
Host: *Phoca vitulina concolor*
Dist.: Atl
Record: McClelland 1980c

ORDER STRONGYLIDA

SUPERFAMILY ANCYLOSTOMATOIDEA
FAMILY ANCYLOSTOMATIDAE

Uncinaria lucasi Stiles, 1901 (adults and larvae)
Sites: intestine (adults), blubber (larvae)
Host: *Callorhinus ursinus*
Dist.: Pac
Records: Bigg and Lyons 1981; Lyons and Bigg 1983
Remarks: These records represent infections passed to pups born in captivity (in Nanaimo, B.C.) through transmammary transmission from naturally infected mothers captured on the Pribilof Islands, Alaska.

SUPERFAMILY METASTRONGYLOIDEA
FAMILY FILAROIDIDAE

Filaroides (Parafilaroides) hispidus Kennedy, 1986
Site: lungs
Host: *Phoca hispida*
Dist.: W Arc
Record: Kennedy 1986

Filaroides (Parafilaroides) sp.
Syn.: *Parafilaroides* sp. of Margolis, 1956
Site: lungs
Host: *Eumetopias jubatus*
Dist.: Pac
Record: Margolis 1956

FAMILY PSEUDALIIDAE

Halocercus invaginatus (Quekett, 1841) Dougherty, 1943
Syn.: *Halocercus inflexicaudatus* of Smith and Threlfall (1973)
Site: lungs
Host: *Phocoena phocoena*
Dist.: Atl, Pac
Records: Smith and Threlfall 1973 (Atl); Arnold and Gaskin 1975 (Atl, Pac)

Halocercus monoceris Webster, Neufeld and MacNeil, 1973
Site: lungs
Host: *Monodon monoceros*
Dist.: E Arc
Records: Webster, Neufeld and MacNeil 1973; MacNeil, Neufeld and Webster 1975
Remarks: This species was recovered from narwhals captured in the eastern Arctic and transported to the Vancouver aquarium, where they died.

Halocercus taurica Delyamure, 1942
Site: lungs
Host: *Phocoena phocoena*
Dist.: Atl, Pac
Record: Arnold and Gaskin 1975

Halocercus sp.
Site: lungs
Host: *Phocoena phocoena*
Dist.: Atl
Record: Smith and Threlfall 1973

Pharurus alatus (Leuckart, 1848) Stiles and Hassall, 1905
Site: lungs
Host: *Monodon monoceros*
Dist.: E Arc
Record: Arnold and Gaskin 1975

Pharurus pallasii (van Beneden, 1870) Arnold and Gaskin, 1975
Syn.: *Stenurus arcticus* (Cobb, 1888)
Crassicauda sp. of Brodie (1971)
Sites: lungs, cranial sinuses, cerebral spinal fluid, auditory canals
Host: *Delphinapterus leucas*
Dist.: Atl, E Arc, W Arc
Records: Doan and Douglas 1953 (E Arc); Brodie 1971 (E Arc); Arnold and Gaskin 1975 (Atl, E Arc, W Arc); Kenyon and Kenyon 1977 (E Arc); Martineau et al. 1985 (Atl); Wazura et al. 1986 (W Arc)

Pharurus sp.
Syn.: *Pseudostenurus* sp. of Smith and Threlfall (1973)
Site: unspecified
Host: *Phocoena phocoena*
Dist.: Atl
Record: Smith and Threlfall (1973)
Remarks: Anderson (1978) listed *Pseudostenurus* Yamaguti, 1951 as a synonym of *Pharurus* Leuckart, 1848. In addition, Arnold and Gaskin (1975) commented that "the occurrence of the genus *Pseudostenurus* in harbor porpoise by Smith and Threlfall (1973) ... needs confirmation."

Pseudalius inflexus (Rudolphi, 1808) Schneider, 1866
Site: lungs
Host: *Phocoena phocoena*
Dist.: Atl
Record: Arnold and Gaskin 1975

Stenurus arctomarinus Delyamure and Kleinenberg, 1958
Site: lungs
Host: *Delphinapterus leucas*
Dist.: E Arc, W Arc
Record: Arnold and Gaskin 1975

Stenurus globicephalae Baylis and Daubney, 1925
Sites: trachea, lungs, cranial sinuses
Hosts: *Globicephala melaena* (1, 2, 3)
Grampus griseus (3)
Dist.: Atl
Records: 1. Cowan 1966; 2. 1967; 3 Arnold and Gaskin 1975

Stenurus minor (Kuhn, 1829) Baylis and Daubney, 1925
Site: lungs
Host: *Phocoena phocoena*
Dist.: Atl
Record: Arnold and Gaskin 1975

Torynurus convolutus (Kuhn, 1829) Baylis and Daubney, 1925
Sites: respiratory system, esophagus, cranial sinuses
Hosts: *Globicephala melaena* (1)
Phocoena phocoena (2, 3)
Dist.: Atl, Pac
Records: 1. Sergeant 1962 (Atl); 2. Arnold and Gaskin 1975 (Atl, Pac); 3. Gibson and Harris 1979 (Atl)

Torynurus dalli (Yamaguti, 1951) Delyamure, 1972
Syn.: *Irukanema dalli* Yamaguti, 1951 of Smith and Threlfall (1973)
Site: unspecified
Host: *Phocoena phocoena*
Dist.: Atl
Record: Smith and Threlfall 1973
Remarks: Arnold and Gaskin (1975) suggested that the specimens reported as *Irukanema dalli* by Smith and Threlfall (1973) may actually be *Torynurus convolutus.*

UNIDENTIFIED NEMATODA

Nematoda gen. sp.
Site: unspecified
Host: *Erignathus barbatus*
Dist.: E Arc
Record: Dunbar 1949

PHYLUM ACANTHOCEPHALA

CLASS PALAEACANTHOCEPHALA

ORDER POLYMORPHIDA

FAMILY POLYMORPHIDAE

Bolbosoma capitatum (von Linstow, 1880) Porta, 1908
Site: intestine
Host: *Globicephala melaena*
Dist.: Atl
Record: Cowan 1967

Bolbosoma turbinella (Diesing, 1851) Porta, 1908
Site: small intestine
Host: *Balaenoptera borealis*
Dist.: Pac
Record: Margolis and Pike 1955

Bolbosoma sp.
Site: intestine
Host: *Balaenoptera physalus*
Dist.: Pac
Record: Previously unpublished

Corynosoma cameroni Van Cleave, 1953
Site: intestine
Host: *Delphinapterus leucas*
Dist.: Atl
Records: Van Cleave 1953a; 1953b

Corynosoma magdaleni Montreuil, 1958
Site: intestine
Host: *Halichoerus grypus*
Dist.: Atl
Record: Montreuil 1958

Corynosoma reductum (von Linstow, 1905) Railliet and Henry, 1907
Site: intestine
Host: *Phoca hispida*
Dist.: E Arc
Record: Van Cleave 1953b

Corynosoma strumosum (Rudolphi, 1802) Lühe, 1904
Syn.: *Corynosoma semerme* (Forssell, 1904) of Fisher (1952)
Sites: small intestine, stomach
Hosts: *Delphinapterus leucas* (1, 2)
Erignathus barbatus (1)
Phoca hispida (1)
Phoca vitulina richardsi (3, 4)
Dist.: Atl, E Arc, Pac
Records: 1. Lyster 1940 (Atl, E Arc); 2. Vladykov 1944 (Atl); 3. Fisher 1952 (Pac); 4. Margolis 1956 (Pac)
Remarks: Margolis (1956) noted that *C. semerme* of Fisher (1952) is probably referable to *C. strumosum.*

Corynosoma validum Van Cleave, 1953
Syn.: *Corynosoma semerme* of Lyster (1940)
Site: small intestine
Host: *Erignathus barbatus*
Dist.: E Arc
Records: Lyster 1940; Van Cleave 1953b
Remarks: According to Van Cleave (1953b), *C. semerme* of Lyster (1940) is referable to *C validum.*

Corynosoma villosum Van Cleave, 1953
Site: intestine
Host: *Eumetopias jubatus*
Dist.: Pac
Record: Margolis 1956

Corynosoma wegeneri Heinze, 1934
Syn.: *Corynosoma hadweni* Van Cleave, 1953
Site: intestine
Host: *Phoca hispida*
Dist.: E Arc
Record: Van Cleave 1953b
Remarks: Margolis (1955) noted that *C. hadweni* is a probable synonym of *C. wegeneri.*

Corynosoma spp.
Site: intestine
Hosts: *Phoca vitulina concolor* (1)
Phocoena phocoena (2)
Dist.: Atl, Pac
Records: 1. McClelland 1980c (Atl); 2. Previously unpublished (Pac)
Remarks: A single, immature female specimen found by one of us (L.M.) in *Phocoena phocoena* from the Pacific coast appears to be referable to *C. similis* Neiland, 1962, but a definite allocation to this species is reserved until further material is obtained.

PHYLUM ARTHROPODA

CLASS CRUSTACEA
SUBCLASS ENTOMOSTRACA

ORDER COPEPODA
SUBORDER SIPHONOSTOMATOIDA

FAMILY PENNELLIDAE

Pennella balaenopterae Koren and Danielssen, 1877
Site: head embedded in blubber, trunk external
Host: *Balaenoptera physalus*
Dist.: Pac
Records: Cornwall 1927; 1928; 1955

SUBCLASS MALACOSTRACA

ORDER AMPHIPODA

FAMILY CYAMIDAE

Cyamus balaenopterae Barnard, 1932
Site: body surface
Host: *Balaenoptera acutorostrata*
Dist.: Pac
Record: Margolis 1959

Cyamus boopis Lütken, 1870
Syn.: *Paracyamus boopis* (Lütken, 1870) Sars, 1895
Site: body surface
Hosts: *Balaenoptera physalus* (5)
Megaptera novaeangliae (1, 2, 3, 4)
Dist.: Atl, Pac
Records: 1. Cornwall 1928 (Pac); 2. Margolis 1954 (Pac); 3. Leung 1965 (Pac); 4. Brunel 1970 (Atl); 5. Previously unpublished (Atl)
Remarks: The record of *C. boopis* from *B. physalus* appears to be the first from the fin whale.

Cyamus catodontis Margolis, 1954
Site: body surface
Host: *Physeter catodon*
Dist.: Pac
Records: Margolis 1954; Leung 1965

Cyamus ceti (Linnaeus, 1758) Lamarck, 1801
Site: not specified
Host: not specified [probably *Balaena mysticetus*]
Dist.: E Arc
Record: Lincoln and Hurley 1974
Remarks: The locality for this record indicated by Lincoln and Hurley (1974) is Baffin Bay. Although the specific locality could be either in Greenland or in Canada, it is included here. The host was not specified but it was probably *B. mysticetus,* the usual host for this cyamid.

Cyamus erraticus Roussel de Vauzème, 1834
Site: body surface
Host: *Balaena glacialis*
Dist.: Pac
Record: Margolis 1955

Cyamus mondontis Lütken, 1870
Site: [body surface]
Host: *Monodon monoceros*
Dist.: E Arc
Records: Leung 1965; Lincoln and Hurley 1974

Cyamus nodosus Lütken, 1860
Site: [body surface]
Host: unspecified
Dist.: E Arc
Record: Lincoln and Hurley 1974
Remarks: Although Lincoln and Hurley (1974) did not specify the host, the usual host for this cyamid is *Monodon monoceros.*

Cyamus ovalis Roussel de Vauzème, 1834
Site: [body surface]
Host: *Balaena glacialis*
Dist.: Pac (?)
Record: Berzin and Vlasova 1982
Remarks: Berzin and Vlasova (1982) listed *C. ovalis* from *Eubaelena glacialis japonica* from Canada in their Table 3.

Cyamus scammoni Dall, 1872
Site: body surface
Host: *Eschrichtius robustus*
Dist.: Pac
Records: Margolis 1954; 1955; Cornwall 1955

Cyamus sp.
Site: [base of teeth]
Host: *Berardius bairdii*
Dist.: Pac
Record: Leung 1965
Remarks: Based on personal observations by one of us (L.M.), this species appears to be distinct from other species of *Cyamus*, although it is close to *C. catodontis*.

Isocyamus delphini (Guèrin-Méneville, 1836) Gervais and van Beneden, 1859
Site: body surface
Host: *Globicephala melaena*
Dist.: Atl
Records: Sergeant 1962; Cowan 1966

Neocyamus physeteris (Pouchet, 1888) Margolis, 1955
Site: body surface
Host: *Physeter catodon*
Dist.: Pac
Record: Margolis 1959

Platycyamus sp.
Site: body surface
Host: *Berardius bairdii*
Dist.: Pac
Record: Leung 1965

CLASS INSECTA
SUBCLASS PTERYGOTA

ORDER ANOPLURA

FAMILY ECHINOPHTHIRIIDAE

Antarctophthirus microchir (Trouessart and Neumann, 1888) Enderlein, 1906
Site: body surface
Host: *Eumetopias jubatus*
Dist.: Pac
Records: Margolis 1956; Spencer 1966

Antarctophthirus trichechi (Bohemann, 1865) Enderlein, 1909
Site: body surface
Host: *Odobenus rosmarus*
Dist.: E Arc
Record: Spencer 1966

Echinophthirius horridus (Olfers, 1816) Fahrenholz, 1919
Syn.: Echinophthiriidae gen. sp. of Fisher (1952)
Site: body surface
Hosts: *Phoca groenlandica* (4)
Phoca hispida (2, 3)
Phoca vitulia concolor (3, 5)
Phoca vitulina richardsi (1, 3)
Dist.: Atl, E Arc, Pac
Records: 1. Fisher 1952 (Pac); 2. Myers 1959 (E Arc); 3. Spencer 1966 (Atl, E Arc, Pac); 4. Ronald et al. 1970 (Atl); 5. McClelland 1980c (Atl)

CLASS ARACHNOIDEA

ORDER ACARINA

FAMILY HALARACHNIDAE

Halarachne sp.
Site: nasopharynx, nasal cavity
Host: *Phoca vitulina richardsi*
Dist.: Pac
Records: Fisher 1952; Margolis 1956

Orthohalarachne attenuata (Banks, 1910) Newell, 1947
Site: nasal sinuses
Host: *Callorhinus ursinus*
Dist.: Pac
Record: Previously unpublished

Orthohalarachne diminuata (Doetschman, 1944) Newell, 1947
Sites: lungs, bronchioles
Hosts: *Callorhinus ursinus* (2)
Eumetopias jubatus (1)
Dist.: Pac
Records: 1. Margolis 1956; 2. Previously unpublished

HOST-PARASITE LIST

CLASS MAMMALIA

ORDER CETACEA
SUBORDER ODONTOCETI

FAMILY DELPHINIDAE

Globicephala melaena (Traill, 1809)
- long-finned pilot whale
PROTOZOA (Apicomplexa):
Sarcocystis sp. (Atl)
TREMATODA:
Orthosplanchnus arcticus (Atl)
CESTOIDEA:
Diphyllobothrium sp. (Atl)
Phyllobothrium delphini (Atl)
Phyllobothrium sp. (Atl)
Plicobothrium globicephalae (Atl)
Trigonocotyle lintoni (Atl)
NEMATODA:
Anisakis simplex (Atl)
Anisakis sp. (Atl)
Stenurus globicephalae (Atl)
Torynurus convolutus (Atl)
ACANTHOCEPHALA:
Bolbosoma capitatum (Atl)
AMPHIPODA:
Isocyamus delphini (Atl)

Grampus griseus (G. Cuvier, 1812)
- Risso's dolphin
NEMATODA:
Stenurus globicephalae (Atl)

Lagenorhynchus albirostris Gray, 1846
- white-beaked dolphin
CESTOIDEA:
Plicobothrium globicephalae (Atl)
NEMATODA:
Anisakis sp. (Atl)

Orcinus orca (Linnaeus, 1758) - killer whale
NEMATODA:
Anisakis simplex (Pac)

Pseudorca crassidens (Owen, 1846)
- false killer whale
NEMATODA:
Anisakis sp. (Pac)

FAMILY MONODONTIDAE

Delphinapterus leucas (Pallas, 1776) - white whale
TREMATODA:
Hadwenius seymouri (W Arc)
Leucasiella arctica (W Arc)
NEMATODA:
Anisakis simplex (Atl, E Arc, W Arc)
Anisakis sp. (E Arc)
Contracaecum sp. (W Arc)
Pharurus pallasii (Atl, E Arc, W Arc)
Pseudoterranova decipiens (Atl)
Stenurus arctomarinus (E Arc, W Arc)
ACANTHOCEPHALA:
Corynosoma cameroni (Atl)
Corynosoma strumosum (Atl)

Monodon monoceros Linnaeus, 1758 - narwhal
NEMATODA:
Halocercus monoceris (E Arc)
Pharurus alatus (E Arc)
AMPHIPODA:
Cyamus monodontis (E Arc)
Cyamus nodosus (?) (E Arc)

FAMILY PHOCOENIDAE

Phocoena phocoena (Linnaeus, 1758)
- harbor porpoise
TREMATODA:
Campula oblonga (Atl, Pac)
Hadwenius nipponicus (Pac)
NEMATODA:
Anisakis simplex (Pac)
Contracaecum sp. (Atl)
Crassicauda sp. (Pac)
Halocercus invaginatus (Atl, Pac)
Halocercus taurica (Atl, Pac)
Halocercus sp. (Atl)
Pharurus sp. (Atl)
Pseudalius inflexus (Atl)
Pseudoterranova decipiens (Atl)
Stenurus minor (Atl)
Torynurus convolutus (Atl, Pac)
Torynurus dalli (Atl)
ACANTHOCEPHALA:
Corynosoma sp. *(?C. similis)* (Pac)

Phocoenoides dalli (True, 1885) - Dall's porpoise
TREMATODA:
Campula oblonga (Pac)
NEMATODA:
Anisakis simplex (Pac)

FAMILY PHYSETERIDAE

Physeter catodon Linnaeus, 1758 - sperm whale
Syn.: *Physeter macrocephalus* Linnaeus, 1758
CESTOIDEA:
Phyllobothrium delphini (Pac)
NEMATODA:
Anisakis physeteris (Atl, Pac)
Anisakis simplex (Atl, Pac)
Placentonema gigantissima (Pac)

AMPHIPODA:
Cyamus catodontis (Pac)
Neocyamus physeteris (Pac)

FAMILY ZIPHIIDAE

Berardius bairdii Stejneger, 1883
- North Pacific bottle-nosed whale
NEMATODA:
Anisakis simplex (Pac)
AMPHIPODA
Cyamus sp. (Pac)
Platycyamus sp. (Pac)

SUBORDER MYSTICETI

FAMILY BALAENIDAE

Balaena glacialis Müller, 1776 - black right whale
Syn.: *Eubalena glacialis japonica* (Lacépède, 1818)
AMPHIPODA:
Cyamus erraticus (Pac)
Cyamus ovalis (Pac)

?Balaena mysticetus Linnaeus, 1758
- bowhead whale
AMPHIPODA:
Cyamus ceti (E Arc)

FAMILY BALAENOPTERIDAE

Balaenoptera acutorostrata Lacépède, 1804
- minke whale
NEMATODA:
Anisakis simplex (Atl)
AMPHIPODA:
Cyamus balaenopterae (Pac)

Balaenoptera borealis Lesson, 1828 - sei whale
TREMATODA:
Lecithodesmus spinosus (Pac)
Ogmogaster antarcticus (Pac)
Ogmogaster plicatus (Pac)
CESTOIDEA:
Cestoidea gen. sp. (Pac)
NEMATODA:
Anisakis simplex (Pac)
ACANTHOCEPHALA:
Bolbosoma turbinella (Pac)

Balaenoptera physalus (Linnaeus, 1758) - fin whale
Syn.: *Balaenoptera velifera* Cope, 1869
TREMATODA:
Lecithodesmus goliath (Pac)
Ogmogaster plicatus (Pac)
CESTOIDEA:
Phyllobothrium delphini (Atl, Pac)
NEMATODA:
Anisakis simplex (Atl)
Anisakis sp. (Pac)
Crassicauda boopis (Pac)
ACANTHOCEPHALA:
Bolbosoma sp. (Pac)
COPEPODA:
Pennella balaenopterae (Pac)
AMPHIPODA:
Cyamus boopis (Atl)

Balaenoptera sp.
TREMATODA:
Ogmogaster plicatus (Pac)

Megaptera novaeangliae (Borowski, 1781)
- humpback whale
Syn.: *Megaptera versabilis* Cope, 1869
Megaptera nodosa (Bonnaterre, 1789)
CESTOIDEA:
Cestoidea gen. sp. (Pac)
NEMATODA:
Anisakis sp. (Pac)
AMPHIPODA:
Cyamus boopis (Atl, Pac)

FAMILY ESCHRICHTIDAE

Eschrichtius robustus (Lilljeborg, 1861) - gray whale
Syn.: *Rachianectes glaucus* Cope, 1868
Eschrichtius glaucus (Cope, 1868)
Eschrichtius gibbosus (Erxleben, 1777)
AMPHIPODA:
Cyamus scammoni (Pac)

ORDER CARNIVORA

FAMILY ODOBENIDAE

Odobenus rosmarus (Linnaeus, 1758) - walrus
NEMATODA:
Trichinella spiralis (E Arc)
ANOPLURA:
Antarctophthirus trichechi (E Arc)

FAMILY OTARIIDAE

Callorhinus ursinus (Linnaeus, 1758)
- northern fur seal
NEMATODA:
Uncinaria lucasi (Pac)
ACARINA:
Orthohalarachne attenuata (Pac)
Orthohalarachne diminuata (Pac)

Eumetopias jubatus (Schreber, 1776)
- northern sea lion
CESTOIDEA:
Diphyllobothrium pacificum (Pac)
Diplogonoporus tetrapterus (Pac)

NEMATODA:
Contracaecum osculatum (Pac)
Parafilaroides sp. (Pac)
Pseudoterranova decipiens (Pac)
ACANTHOCEPHALA:
Corynosoma villosum (Pac)
ACARINA:
Orthohalarachne diminuata (Pac)
ANOPLURA:
Antarctophthirus microchir (Pac)

FAMILY PHOCIDAE

Erignathus barbatus (Erxleben, 1777) - bearded seal
Syn.: *Phoca barbata* Erxleben, 1777
CESTOIDEA:
Cestoidea gen. sp. (E Arc)
Diphyllobothrium cordatum (E Arc, W Arc)
Diphyllobothrium lanceolatum (Atl, E Arc, W Arc)
Diphyllobothrium sp. (E Arc, W Arc)
Diplogonoporus sp. (Atl)
Pyramicocephalus phocarum (E Arc, W Arc)
NEMATODA:
Contracaecum osculatum (E Arc, W Arc)
Nematoda gen. sp. (E Arc)
Pseudoterranova decipiens (E Arc)
Trichinella spiralis (E Arc)
ACANTHOCEPHALA:
Corynosoma strumosum (E Arc)
Corynosoma validum (E Arc)

Halichoerus grypus (Fabricius, 1791) - gray seal
NEMATODA:
Anisakinae gen. sp. (Atl)
Anisakis sp. (Atl)
Contracaecum osculatum (Atl)
Contracaecum sp. (Atl)
Pseudoterranova decipiens (Atl)
ACANTHOCEPHALA:
Corynosoma magdaleni (Atl)

Phoca groenlandica Erxleben, 1777 - harp seal
Syn.: *Pagophilus groenlandicus* (Erxleben, 1777)
CESTOIDEA:
Anophryocephalus anophrys (Atl)
Diphyllobothrium lanceolatum (Atl, E Arc)
Diphyllobothrium sp. (E Arc)
Diplogonoporus sp. (Atl)
NEMATODA:
Anisakinae gen. sp. (Atl)
Anisakis sp. (Atl)
Contracaecum osculatum (Atl, E Arc)
Contracaecum sp. (Atl)
Pseudoterranova decipiens (Atl, E Arc)
ANOPLURA:
Echinophthirius horridus (Atl)

Phoca hispida Schreber, 1775 - ringed seal
Syn.: *Pusa hispida* (Schreber, 1775)
TREMATODA:
Orthosplanchnus arcticus (W Arc)
NEMATODA:
Contracaecum osculatum (E Arc, W Arc)
Contracaecum sp. (E Arc)
Filaroides (Parafilaroides) hispidus (W Arc)
Phocascaris netsiki (E Arc)
Pseudoterranova decipiens (E Arc)
ACANTHOCEPHALA:
Corynosoma reductum (E Arc)
Corynosoma strumosum (E Arc)
Corynosoma wegeneri (E Arc)
ANOPLURA:
Echinophthirius horridus (E Arc)

Phoca vitulina concolor De Kay, 1842 - harbor seal
PROTOZOA (Apicomplexa):
Eimeria phocae (Atl)
CESTOIDEA:
Anophryocephalus sp. (Atl)
NEMATODA:
Anisakinae gen. sp. (Atl)
Anisakis sp. (Atl)
Contracaecum osculatum (Atl, E Arc)
Contracaecum sp. (Atl)
Dipetalonema spirocauda (Atl)
Phocascaris netsiki (E Arc)
Pseudoterranova decipiens (Atl, E Arc)
ACANTHOCEPHALA:
Corynosoma sp. (Atl)
ANOPLURA:
Echinophthirius horridus (Atl)

Phoca vitulina richardsi (Gray, 1864) - harbor seal
NEMATODA:
Contracaecum osculatum (Pac)
Pseudoterranova decipiens (Pac)
ACANTHOCEPHALA:
Corynosoma strumosum (Pac)
ANOPLURA:
Echinophthirius horridus (Pac)
ACARINA:
Halarachne sp. (Pac)

Records for pinnipeds of undetermined species
"seal"
NEMATODA:
Phocascaris netsiki (E Arc)
"seals"
NEMATODA:
Pseudoterranova decipiens (Atl, E Arc)

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